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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,193	04/09/2004	Chien-Jung Wang	TS02-1314	2320
47390	7590	05/01/2006	EXAMINER	
THOMAS, KAYDEN, HOSTEMEYER & RISLEY LLP 100 GALLERIA PARKWAY SUITE 1750 ATLANTA, GA 30339			PATEL, PARESH H	
			ART UNIT	PAPER NUMBER
			2829	

DATE MAILED: 05/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

H/A

Office Action Summary

Application No.

10/822,193

Applicant(s)

WANG, CHIEN-JUNG

Examiner

Paresh Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 and 33-37 is/are pending in the application.
- 4a) Of the above claim(s) 33-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 12-21 and 25-27 is/are rejected.
- 7) ☒ Claim(s) 9-11 and 22-24 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>05/04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group II Claims (1-27) in the reply filed on 02/20/2006 is acknowledged. Applicant also has added method claims 33-37 depends from structure claims 1 or 15. **Claims 33-37 withdrawn from further consideration** pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

2. Claims 1 and 15 link(s) inventions of structure claims and invention of method claims. The restriction requirement between the linked inventions is subject to the nonallowance of the linking claim(s), claims 1 and 15. **Upon the indication of allowability of the linking claim(s), the restriction requirement as to the linked inventions shall be withdrawn and any claim(s) depending from or otherwise requiring all the limitations of the allowable linking claim(s) will be rejoined and fully examined for patentability in accordance with 37 CFR 1.104.** Claims that require all the limitations of an allowable linking claim will be entered as a matter of right if the amendment is presented prior to final rejection or allowance, whichever is earlier. Amendments submitted after final rejection are governed by 37 CFR 1.116; amendments submitted after allowance are governed by 37 CFR 1.312.

Applicant(s) are advised that if any claim(s) including all the limitations of the allowable linking claim(s) is/are presented in a continuation or divisional application, the claims of the continuation or divisional application may be subject to provisional

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statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Where a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. In re Ziegler, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Drawings/Specification

3. The drawings are objected to under 37 CFR 1.83(a) because they fail to show element 16 of fig. 1, first member of test structure and a second member of a test structure as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New

Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 6, 14-16, 19 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Akram et al. (US 5838161).

Regarding claim 1-2 and 15, Akram et al. (hereafter Akram) in fig. 9 discloses a test structure [76, see fig. 3] comprising: a first rectangular member having a first width dimension; and a first length dimension that is about twice as great as the first width dimension; and a second rectangular member having a second width dimension and a second length dimension that is about twice as great as the second width dimension; combined with the first rectangular member to form a symmetrical cross-shaped test structure. Since, Akram discloses similar shaped test structure, width and length as claimed here are inherent to the fig. 9 of Akram.

Regarding claims 3 and 16, Akram discloses the structure of claim 1, wherein the cross-shaped test structure is comprised of copper [58 or 68 for 76, see fig. 4].

Regarding claims 14 and 27, Akram discloses the structure of claim 15, wherein the test structure is formed within a dielectric layer [66 of 16 for 76].

Regarding claims 6 and 19, Akram discloses the structure of claim 1, wherein the cross-shaped test structure is formed on a test wafer [16 for 76, see 64] or a test site within a product wafer.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4-5, 7-8, 12-13, 17-18, 20-21 and 25-26 rejected under 35 U.S.C. 103(a) as being unpatentable over Akram as applied to claims 1 and 15 above.

Regarding claims 4-5 and 17-18, Akram discloses all the elements. Akram is silent about the cross-shaped test structure has a thickness of from about 5000 to 10,000 .ANG. However, thickness of test structure is inherent for Akram's test structure 76. It would have been an obvious matter of design choice to use thickness of about 5000 Ang. for a test structure, since applicant has not disclosed that use of thickness of about 5000 Ang. solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with test structure of Akram because test structure should have thickness and is well known in the art.

Regarding claims 7-8 and 20-21, Akram discloses all the elements including test wafer [16]. However, area of test structure is shown in fig. 9 of Akram's test structure 76. Akram is silent about the cross-shaped test structure occupies an area of from **about 0.4 by 0.4 .mu.m or about 1.0 by 1.0 .mu.m** on the test wafer. It would have been an obvious matter of design choice to have area of test structure on a test wafer as claimed, since applicant has not disclosed that use of an area of from about 0.4 by 0.4 .mu.m or about 1.0 by 1.0 .mu.m on the test wafer solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with test structure of Akram because test structure should have area and is well known in the art.

Regarding claims 12 and 25, Akram discloses a test structure as claimed, except that Akram is silent about the cross-shaped test structure includes a center and stress gradients surrounding the center. Since, Akram discloses an equivalent test structure, it would have been obvious to have test structure 76 of Akram includes a center and stress gradients surrounding the center.

Regarding claims 13 and 26, Akram discloses all the elements including test structure includes center [center of 76]. Akram is silent about stress gradients exerting maximum stress upon the center. Since, Akram discloses an equivalent test structure, it would have been obvious to have test structure 76 of Akram includes a stress gradients exerting maximum stress upon the center of a test structure.

Allowable Subject Matter

8. Claims 9-11 and 22-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: No prior art has been found that meets the limitation of claims 9-11 and 22-24 calling for a test structure comprising a first and second metal lines being joined at two of their respective opposing ends at about a 90.degree. angle to form an intersection; and a via extending from the first and second metal line intersection to the approximate center of the cross-shaped test structure, as further defined.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paresh Patel whose telephone number is 571-272-1968. The examiner can normally be reached on 8:00 to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Paresh Patel
Primary Examiner
Art Unit 2829

April 27, 2006